

## ***Interactive comment on “Evidence for benthic-pelagic food web coupling and carbon export from California margin bamboo coral archives” by T. M. Hill et al.***

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Author response to reviewers

Reviewer #1 We would like to thank this reviewer for a thorough and thoughtful evaluation of the manuscript. We have incorporated all of the suggested revisions, and the manuscript is improved due to this reviewer’s comments. These modifications include:

1) We have added a figure (new Figure 1) showing the morphology of bamboo coral, including both calcite and gorgonin cross-sections. 2) We have combined the Results and Discussion sections, and in doing so, reorganized these sections per the reviewer’s request. This has improved the organization and the clarity of the manuscript. 3) We

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have added estimates of error for age/growth rates based upon errors for both gorgonin D14C ages as well as previously published calcitic age ranges. The additional text addressing this issue is now found in the first section of Results & Discussion. We have attempted to clearly state the various sources of error and how this influences interpretations. 4) We have addressed and corrected the more ‘minor’ editorial suggestions made by the reviewer and we thank them for their careful attention to the details of this manuscript.

Reviewer #2 We would like to thank this reviewer for a thorough and thoughtful evaluation of the manuscript. We have incorporated nearly all of the suggested revisions, and the manuscript is improved due to this reviewer’s comments. These modifications include: 1) As stated in response to reviewer #1, we have clarified and improved the section on coral chronology and quantified errors associated with the age model. 2) The Reviewer suggests plotting the surface oceanic D14C curve for comparison with the deep coral record. While a regional (or even global) ocean D14C curve is not readily available (these really only exist in organismal records), we have added text (in first section of Results & Discussion, on radiocarbon) explaining the expected trends in both surface and atmospheric records, to facilitate comparison to our deep coral D14C record. We have also added additional references to marine D14C records. 3) For Figure 2A (now figure 3A; and Table 3), we have clarified and limited the use of the 1980 D14C peak in this record. The 1980 peak is only used for corals that do not extend back far enough to capture the initiation of the bomb spike (1957). This results in only two corals relying on the peak at 1980, and the maximum D14C values are utilized to align with this peak. 4) Per the reviewer’s request, we have added a panel to Figure 4 (now Figure 5) to show the complete intercolony reproducibility dataset, using a total of 4 corals. We have modified the text to reflect this update. 5) Per the reviewer’s request, we have modified the language around the one coral with anomalous d13C values, to simply state that the data are anomalous and will not be further considered. 6) We have included all of the reviewers more ‘minor’ editorial suggestions, including updating a missing reference, re-writing an awkward sentence, removing the

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reference to expected positive POM values, and improving language around isotopic shifts (enriched/depleted). 7) For Figure 6, we have removed the regression analysis and instead plot the  $\delta^{13}\text{C}$  data simply against distance from shore. These are all data points generated during this study; there are only 11 because these points reflect averages of outer edge  $\delta^{13}\text{C}$  values from 11 corals, now more clearly stated in the manuscript. 8) Per the reviewers request, we have clearly stated and defined the use of  $\delta^{14}\text{C}$  in this study (section 2 of the methods).

We thank both reviewers for their time and careful attention to this manuscript. The manuscript is improved due to their suggestions.

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Interactive comment on Biogeosciences Discuss., 11, 2595, 2014.